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EXAMINER	
SOUW, BERNARD E	
ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/821,548	BATEMAN ET AL.	
	Examiner	**Art Unit**	
	Bernard E. Souw	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04/09/2004 (Transmittal)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58 and 63-120* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-58 and 63-120* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/23/04+10/7/05*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. Receipt is acknowledged of information disclosure statements (IDS) submitted on 08/23/2004 and 10/07/2005. The submissions are in compliance with the provisions of 37 CFR 1.97.

Signed copies of the information disclosure statements are here enclosed.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Great Britain on 04/10/2003. It is noted, however, that applicant has not filed a certified copy of the British application (GB 0308278.1) as required by 35 U.S.C. 119(b).

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation ".... *error band is greater than or equal to **x%***" in the last line. The term "***x%***" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "x%" is recited in the specification only on page 3/ll.4-8 and page 11/ll.10-14, which recites exactly the same phrase as the indefinite limitation in claim 1, i.e.,: "*wherein the probability or confidence that the real, true, actual or accepted mass to charge ratio of a species of ion falls within its respective calculated error band is greater than or equal to x%.*" Such mere re-iterations do not help those skilled in the art even a little bit as to what Applicant means with the term "x%".

Appropriate correction is required. Applicant is cautioned not to introduce New Matter in obviating this rejection.

In order to proceed with this Office Action, the numerical value of "x%" is assumed to be ***any*** value ranging from 0% to 100%, such that practically any value recited in a prior art will be applicable to reject the claim(s).

5. Claim 1 is also deemed indefinite for reciting the terminology "***error band***". The term "***error band***" is not defined by the claim, the specification does not provide a

standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "***error band***" is recited in the specification only on page 3/ll.2-8 and page 11/ll.8-14, which recites exactly the same phrase as the indefinite limitation in claim 1, i.e.,: "*calculating a respective* ***error band*** *for the determined mass to charge ratio of each of the n different species of ion, wherein the probability or confidence that the real, true, actual or accepted mass to charge ratio of a species of ion falls within its respective calculated* ***error band*** *is greater than or equal to x%.*"

Applicant's explanation does not differ from the conventional definition of "*statistical error*", which is conventionally caused by various instabilities of known operating parameters, exactly as claimed by Applicant in the next paragraphs of the specification and in some of the dependent claims.

Appropriate correction is required. Applicant is cautioned not to introduce New Matter in obviating this rejection.

In order to proceed with this Office Action, Applicant's "*error band*" is interpreted as being no different than the conventional statistical error caused by various instabilities of known operating parameters, such as the statistical error presented in column 3 of Table 1 of Westphall et al. (USPGPub 2004/0169137). As known in the art, such error can be previously estimated by one of ordinary skill in the art based on known values of the instabilities.

6. Claims 7, 9, 14 and 33 recite the limitation ".... *comprises data relating* ***to the time** that different species of ions were detected* ... ". There is insufficient antecedent basis for this limitation in the claim. There is no previous definition or recitation, whatsoever, regarding a ***time*** *of detecting different species*, neither in the parent/preceding claim(s), nor in the specification. Although there is a Time of Flight (TOF) mass spectrometer found as examples or embodiments in the specification, they were not claimed explicitly. Nor were the words that are used in the claims defined in the specification to require these limitations. A reading of the specification provides no evidence to indicate that these limitations must be imported into the claims to give meaning to disputed terms. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Appropriate correction is required. Applicant is cautioned not to introduce New Matter in obviating this rejection.

In order to proceed with this Office Action, the pertinent limitation of claims 7, 9,14 and 33 is interpreted by the examiner as ".... *data relating to the different species of detected ions* ...", such that practically any data relating to the detection of ion species recited in a prior art will be applicable to reject the claim(s).

7. Claims 15, 17 and 34 recite the limitations ".... ***the*** *stability or instability* ... ", "***the*** *operating conditions* ...", and "***the*** *frequency of detection* ...", respectively, in which the definite preposition "***the***" practically has the same meaning as the word "***said***". There is insufficient antecedent basis for such limitation(s) in the claim.

Appropriate correction is required. Applicant is cautioned not to introduce New Matter in obviating this rejection.

8. Claims 8-48 and 70-110 provide for the use of, or means for performing, various types of functional language, but since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

In order to proceed with this office action, claims 8-48 and 70-110 are interpreted as being the same means and/or process steps as conventionally used by those of ordinary skill in the art, and hence, also being the same as those steps used by the cited prior art. Due to the total absence of specific structure or process steps in Applicant's disclosure and claims, any prior art cited by the examiner will be valid for rejecting claims 8-48 and 70-110, since there is no recitation, whatsoever, in Applicant's disclosure that would distinguish Applicant's invention form those of the cited prior art.

Claim Rejections - 35 USC § 112, 6th paragraph

9. The functional recitation of claims 8-48, reciting *a functional language*, with or without reciting the wording "*means for*", has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation <u>not only</u> must be expressed as a "*means*" for performing the specified function, as set forth in 35 USC § 112, 6th paragraph, <u>but also</u> must be supported by recitation in the claim of

sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279. A specific structure to perform said specific function is completely absent in the claims, as well in the disclosure.

35 U.S.C. § 112, ¶ 6 states that a claim limitation expressed in means-plus-function language "*shall be construed to cover the corresponding structure...described in the specification and equivalents thereof.*" "If one employs means plus function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1425, 43 USPQ2d 1896, 1900 (Fed. Cir. 1997).

For example, the specification totally fails to describe even a single structure capable of converting the time that different species ion were detected into a specific charge ratio, as recited in claim 8.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-9, 14, 63-71 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westphall et al. (USPGPub 2004/0169137) in view of Patterson et al. (USPAT 5,821,063).

Westphall et al. disclose a mass spectrometer shown in Fig.5, as recited in sect.[0114] through [0121], comprising: a mass analyzer, which is mainly represented by pre-acceleration region (710), 1st stage extraction region (810) and 2nd stage extraction region (820), as recited in sect.[0117]and [0118]; and a processing system built around signal processor (195) shown in Fig.1, as recited in sect.[0091], said processing system being arranged to obtain mass spectral data, as expressly recited in sect.[0124]/ll.8-12, to determine a mass to charge ratio of n different species of ion observed in said mass spectral data, as expressly recited in sect.[0114]/ll.1-4, [0115]/ll.1-5 and [0121]/ll.4-8, wherein a plurality (=n≥1) of ionic species is expressly recited in sect.[0052]/ll.4-10 and [0078]/ll.1-3, as shown in Table 1 in sect.[0139] for an example of six (n=6) ionic species, and to calculate a respective "*error band*" for the

determined mass to charge ratio of each of said n different species of ion, as represented by column 3 in Table 1.

However, Westphall et al. do not specify the statistical results in terms of confidence level, but simply in terms of conventional (.i.e., standard) error, or standard deviation, as given in column 3 of Table1.

Patterson et al. disclose a mass spectrometer processing similar to Westphall's. as recited in Col.18/ll.45-67, Col.19-22, through Col.23/ll.1-10, in which the statistics is presented in terms of *theprobability (or confidence) that the real, true, actual or accepted mass to charge ratio of a species of ion falls within its respective calculated error band is greater than or equal to x%*", as recited in column 3 of Patterson's Table 4 shown in Col.21/ll.60-67, Col.22/ll.1-67 and Col.23/ll.1-10, wherein Patterson's values of "x" range between x=95 and x=99.8, except ion species (fragment) #28 and #38 (labeled Gln/Lys), thus *rendering obvious claims 1, 3-5, 63 and 65-67 simultaneously* (whereas ion species #28 and #38 satisfy the limitations of claims 3, 4, 65 and 66 only).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to present Westphall's statistical results in terms of confidence level, as taught by Patterson et al., in order to have a measure regarding the accuracy of the error estimates.

One of ordinary skill in the art would have been motivated to modify Westphalls's statistics by Patterson's to show that the results obtained are accurate and acceptable.

► Regarding claims 2 and 64, Westphall's mass spectrometer also handles n different species, as expressly recited in sect.[0114]/ll.1-4, [0115]/ll.1-5 and [0121]/ll.4-8, wherein $n \geq 1$ is a plurality of ionic species which is expressly recited in sect.[0052]/ll.4-10 and [0078]/ll.1-3, as shown in Table 1 in sect.[0139], for an example of six (n=6) ionic species, and twenty-one (n=21) ionic species in Patterson's Table 4.

► Regarding claims 6 and 68, both Westphall's Table 1 and Patterson's Table 4 are means for <u>reporting</u> the mass to charge ratio of at least some of said n species of ion (n=6 in Westphall's Table 1; n=21 in Patterson's Table 4) together with the respective calculated error band for each mass to charge ratio, as given in column 3 of Patterson's Table 4.

► Regarding claims 7 and 69, Westphall's signal processing comprises data relating to the time that different species of ions were detected, as expressly recited in the Abstract/ll.14-17, sect.[0018]/ll.1-8 and sect.[0124]/ll.8-12.

► Regarding claims 8 and 70, Westphall's signal processing converts the different detection times of ionic species into mass to charge ratio, as expressly recited in sect.[0121], [0122] and [0138].

► As per claim 9, insofar the examiner can ascertain beyond the previously applied 35 U.S.C. §112, 6th paragraph, Westphall's signal processing converts the different detection times of ionic species into mass to charge ratio using a calibration function given in Eq. IV recited in sect.[0121] and [0122].

► Regarding claims 14 and 76, insofar the examiner can ascertain beyond the previously applied 35 U.S.C. §112, 6th paragraph rejections, changes in the time of

detection are already encompassed in Westphall's method as modified by Patterson's, as reflected in Eq. IV recited in sect.[0121] and [0122], i.e., if the detection time changes, so is also the resulting mass to charge ratio, thus causing a systematic error in the determination of the latter.

13. Insofar the examiner can ascertain beyond the 35 U.S.C. §112, 6th paragraph, previously applied to most of the claims, claims 10-13, 15-40, 43-48, 50, 53-58, 72-75, 77-102, 105-110, 112 and 115-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westphall et al. in view of Patterson et al., and further in view of any one of Labowsky (USPAT 5,300,771), Schwartz et al. (USPAT 5,572,022), Decker et al. (USPGPub 2003/0129657), Hoyes et al. (USPAT 6,373,052), and Fuhrer et al. (USPGPub 2005/0006577).

Westphall et al. as modified by Patterson et al. show all the limitations of claims 10-13, 15-40, 43-48, 50, 53-58, 72-75, 77-102, 105-110, 112 and 115-120, as previously applied to their parent claims, except for certain/specific claim limitations to be discussed as follows:

(a) Labowsky, Col.1/ll.50-59 (rendering obvious claims 10, 13, 32, 35, 48, 72, 75, 94, 97 and 110):

> *Averaging over the m/z values of several peaks can substantially reduce random errors, thereby significantly increasing the confidence in, and precision of, mass assignments. However, such averaging has no affect on systematic errors, e.g. those due to errors in the calibration of the instrument mass scale. Thus, although peak multiplicity does make possible an increase in the precision of an Mr determination it does not necessarily provide an increase in its accuracy.*

(b) Labowsky Col.7/ll.48-68 + Col.8/ll.1-9 (rendering obvious claims 39, 40, 48, 101, 102 and 110):

> *In addition to the accuracy of the scale calibration, the quality of the measured spectrum is also an important factor in determining the accuracy with which Mr can be measured. Spectra with sharp, narrow peaks provide more reliable values than spectra with peaks that are broad or poorly shaped. Observed <u>peak widths and shapes</u> depend upon a number of factors including <u>isotope spread, compound heterogeneity, extent of ion solvation, variation in identity (i.e mass) of adduct charges, and instrument resolving power</u>.*

(c) Labowsky Col.10/l.22-47 (rendering obvious claims 22, 31, 32, 36, 48, 50, 53, 54, 84, 93, 94, 98, 110, 112, 115 and 116):

> *The <u>length of this intersection ridge</u> is important because it is a <u>measure of the accuracy</u> of the mass measurement. Clearly, the larger the number r: of peaks in the coherent sequence, and/or the smaller are their <u>widths</u>, the smaller is the <u>uncertainty of the mass determination</u>. "<u>Uncertainty</u>" here refers only to the <u>random errors</u>. Any <u>systematic errors</u>, due for example to an offset that is the same over the <u>whole m/z scale</u> because of <u>poor calibration</u>, will not affect the dimensions of the overlap region or, therefore, the length of the ridge. Equation 6 would apply in such a case but would not reveal the presence of such an error. If, on the other hand, the <u>error in m/z varies at different positions on the analyzer scale</u>, then Eq. 6 cannot be counted upon to provide a reliable value for the maximum dimension of the overlap region. Such a variable <u>offset error</u> would result in larger uncertainties in values for M.sub.r and m.sub.a that could be obtained from the spectrum. We arrived at Eq.6 by considering an idealized spectrum. In real spectra, <u>peak shapes</u> as well as <u>scale calibration</u> have significant effects on the accuracy of <u>mass assignment</u>. Even so, Eq. 6 is useful because it shows the relation between the length of a ridge on the 3D surface and the charge state of the ions, the number of peaks in the spectrum, and the <u>width of those peaks</u>.*

(d) Labowsky Col.33/ll.58-68 & Col.34/ll.120 (rendering obvious claims 11, 12, 18, 19, 23-26, 37, 38, 48, 55-58, 73, 74, 80, 81, 85-88, 99, 100, 110 and 117-120):

> *As also discussed in the detailed description of the invention, peaks can be elongated into ridges by calibration <u>errors in the analyzer's mass scale, by random errors in the measurements and uncertainties in the mass</u>, or by <u>heterogeneity and impurities in the analyte species of the sample</u>. The widths of these ridges is also a measure of errors in the analysis and heterogeneity in the sample. Multiplicity of ridges can result from incidental <u>coincidences of peaks in a measured spectrum with peaks in a calculated spectrum</u> based on values of Mr and m.sub.a that differ from the true values. Such ridge multiplicity, or peak multiplicity in a two dimensional <u>deconvolution</u>, can be eliminated by incorporation of appropriate filter functions in the <u>deconvolution algorithm</u>. Another symptom of error is the occurrence of a peak summit at an unrealistic value of m.sub.a, 0.5 for example. However, one should not be surprised to find peak summits at negative values of the ma coordinate. Some ions result from the loss of a charged entity from the parent species. Such loss is frequently encountered in the formation of negative ions, for example by dissociation of a cation from a carboxylic acid or salt. In sum, there is an abundance of information in the*

> *topography of a 3D surface produced by deconvoluting a measured mass spectrum in accordance with the procedures taught by the invention.* ***By accumulating experience in practicing its deconvolution approach, an investigator develops skill and insight in "reading" the surface and becomes increasingly able to recover the wealth of information it contains with facility and dispatch.***

(e) Schwartz et al. Col.4/ll.16-20 (rendering obvious claims 29, 30, 43, 44, 91, 92, 105 and 106):

> *When* operating a mass spectrometer, the *amount of ions entering the ion trap for analysis varies. In the prior art the ionization times have remained relatively constant. Thus, when the amount of ions exceeds a certain threshold level, sample saturation and space charge effects may result in the loss of mass resolution and sensitivity and errors in mass assignment.*

(f) Schwartz et al., Col.9/ll.38-44 (rendering obvious claims 29, 30, 43, 44, 46, 47, 91, 92, 105, 106, 108 and 109):

> *The accumulation of similarly charged particles in any device is a source of space charge and saturation which leads ultimately to perturbation of the properties of the sample ions. In analytical instruments, the effects of space charge lead to saturation of detector response as ion-ion repulsion becomes significant.*

(g) Decker et al., sect.[0020] (rendering obvious claims 15-17, 27, 28, 34, 77-79, 82, 83, 89, 90 and 96), wherein temperature drift includes the stability and operating conditions, while long time-interval, or rare frequency, of calibrating the device is also known to cause a drift, and hence, systematic mass error(s):

> *[0020] If the mass spectrometer also tends to produce systematic errors caused by phenomena such as temperature drift, these errors can be eliminated by recalibration as described above, before using the invention.*

(h) Hoyes et al., Col.3/ll.13-22 (rendering obvious claim 45 and 107):

> *It is an objective, therefore, of the present invention to provide a method of correcting the distortion of a time-of-flight mass spectrum due to detector dead-time without the need to either store or process the acquired data immediately following acquisition. It is another object of the invention to provide a method of correcting the error in the mass-calibration of time-of-flight mass spectra which sometimes results from detector dead-time and in particular a method which can be applied once the data has been processed.*

(i) Fuhrer et al. (USPGPub 2005/0006577), sect [0138] (rendering obvious claim 33 and 95), wherein the term "*noise*" simply means "*error*":

[0138] If, however, the information (parallel data word) is fixed (or at least known) and used as a "carrier," and the "noise" arises from some signal of interest (e.g., an arrival of ions), then the time-of-arrival of the "noise" event signal can be inferred from the word-position and bit-position where the transmission "error" change occurs.

(j) Dunkel (USPAT 5,218,299), Col.17/ll.34-51 (rendering obvious claim 55-58 and 117-120), wherein all claim limitations related to the term "*interrogate*" belong to Dunkel's "*interactive*" steps):

*Finally, there might not exist an overall phase function for all signals in a spectrum. Examples from NMR spectroscopy are spectra with partly suppressed (solvent) signals which show random phase or aliased lines ("ghosts") that exhibit the phase characteristic of their true position which lies outside the detected frequency range. The identification of such problems can be achieved by a goodness-of-fit test for the best-fit weighted linear phase function. Correction of such problems in general is difficult and might require additional information, e.g. **interactive** input from a spectroscopist. However, if only a minority of signals exhibit phase anomalies, outlier tests can be used to identify these signals and they can be excluded from further analysis. Generally, it will be desirable to provide some kind of indication when signals have been excluded to alert the spectroscopist of possible data or equipment problems.*

(k) Fahy (USPAT 6,203,990), Col.17/ll.43-49 (also rendering obvious claim 55-58 and 117-120), wherein all claim limitations related to the term "*interrogate*" belong to Fahy's "*interactive*" steps):

*If not all bands had been obtained, then in step 318 stringency and slope correction option values are modified. For example, the user can move the slider bars 710 and 714 to adjust the mito stringency and slope correction values, or the routine 300 can automatically adjust such correction under an **interactive** process to obtain the correct number of mitochondrial bands.*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adopt the various teaching of Labowsky, Schwartz et al., Decker et al., Hoyes et al., and/or Fuhrer et al. to modify Westphall's as previously modified by Patterson's, since those steps --or means for performing those steps-- are conventional, and hence, well known in the art. Since Applicant has not disclosed any structural detail of the recited means, or any process steps, and it appears that the invention would

perform equally well with the respective means or steps suggested by Labowsky, Schwartz et al., Decker et al., Hoyes et al., and/or Fuhrer et al., it would have been obvious that one of ordinary art would adopt those teaching as a general knowledge in the art that is unpatentable, because it only involves routine skill in the art.

One of ordinary skill in the art would have been motivated to modify Westphall's as previously modified by Patterson's by the teaching of the cited prior arts, since those means or steps have been already proven to be functional.

► Similar to previous claims, the limitations of claims 53-58 and 115-120 are already encompassed in Westphall's as modified by Patterson's, as further modified by Labowsky, Schwartz et al., Decker et al., Hoyes et al., and Fuhrer et al., since those (means for performing) steps are all conventional, and hence, well-known in the art. Elements of the limitations can be found in one or more of the cited prior art. As in the previous case, Applicant's term involving "*interrogate*" is here interpreted as belonging to Dunkel's "*interactive*" steps. Moreover, Applicant's means for, or process step using the claim language "*to see whether* ..." recited in claims 55-58 and 117-120 is a mere "*mental exercise*" that does not have any real effect, and therefore can not be granted the full weight of a claim limitation,

Since Applicant has not disclosed any structural detail of the recited means, or any process steps, and it appears that the invention would perform equally well with the respective means or steps suggested by Labowsky, Schwartz et al., Decker et al., Hoyes et al., and/or Fuhrer et al., it would have been obvious that one of ordinary art

would adopt those teaching as a general knowledge in the art that is unpatentable, because it only involves routine skill in the art.

One of ordinary skill in the art would have been motivated to modify Westphall's as previously modified by Patterson's by the teaching of the cited prior arts, since those means or steps have been already proven to be functional.

14. Insofar the examiner can ascertain beyond the previously applied 35 U.S.C. §112, 6th paragraph rejections to the first two of the claims, claims 41, 42, 103 and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westphall et al. in view of Patterson et al., and further in view of Labowsky.

Westphall et al. as modified by Patterson et al. show all the limitations of claims 41, 42, 103 and 104, as previously applied to their parent claims, except for the limitation that the error due to mass interference is estimated by comparing the shape of an observed mass peak (claims 41 and 103), or profile (claims 42 and 104), from said mass spectral data with the shape of a theoretical mass peak. These limitations are also rendered obvious by Labowsky, as already cited above in subsections (c) and (d), recited in Col.7/ll.48-68 + Col.8/ll.1-9 and Col.10/l.22-47,

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adopt the Labowsky's teaching to modify Westphall's as previously modified by Patterson's, since Labowsky's steps --or means for performing those steps-- are conventional, and hence, well known in the art. Since Applicant has not disclosed any structural detail of the recited means, or any process steps, and it appears that the

invention would perform equally well with the respective means or steps suggested by Labowsky, it would have been obvious that one of ordinary art would adopt those teaching as a general knowledge in the art that is unpatentable, because it only involves routine skill in the art.

One of ordinary skill in the art would have been motivated to modify Westphall's as previously modified by Patterson's by the teaching of Labowsky, since Labowsky's means or steps have been already proven to be functional.

15. Claims 49, 51, 111 and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westphall et al. in view of Patterson et al. and Labowksy, and further in view of Hoyes et al.

Westphall et al. in view of Patterson et al. and Labowsky show all the limitations of claims 49 and 111, as previously applied to the parent claims 48 and 110, respectively, except the recitation that the processing system combines the multiple estimates of different errors by adding said estimates in quadrature.

As a matter of fact, the limitation that a combination of multiple estimates of different errors is obtained by simply adding said estimates in quadrature follows directly from the teaching of Hoyes et al. The latter teaches that in the absence of overlapping mass peaks the shape of a mass peak produced by the spectrometer with a zero dead-time detector can be represented by a predetermined peak-shape function which in a preferred embodiment is a simple Gaussian function, as recited in Col.7/ll.11-20 and shown in FIG.2.

The examiner takes the official notice, it is generally known in the art (e.g. in mathematical statistics) that a combination of multiple Gaussian estimates of different errors is obtained by simply adding said estimates in quadrature.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain a combination of multiple Gaussian estimates of different errors by simply adding said estimates in quadrature, since that is the proper way to combine two or more Gaussian line shapes as known from textbooks of mathematical statistics.

One of ordinary skill in the art would have been motivated to modify Westphall's as previously modified by Patterson's by the general knowledge in the art as taken from textbooks, since that method is already proven as being mathematically correct.

► Specifically regarding claims 51 and 113, the recited biopolymers are all conventional data available from open literature; not a single one is Applicant's own invention. There is no evidence, whatsoever, that Applicant has ever performed any precision mass measurements for use as calibration standard. Therefore, the step of <u>compiling and using</u> what is <u>already known</u> in the art is not patentable, since it only involves routine skill in the art.

16. Claims 52 and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westphall et al. in view of Patterson et al. and Labowsky, and further in view of Deinzer et al. (USPAT 5,340,983).

Westphall et al. in view of Patterson et al. and Labowsky show all the limitations of claims 52 and 114, as previously applied to the parent claims 50 and 112, respectively, except the recitation that the compiled database comprises details of the Electron Impact mass spectra of compounds.

Similar to the previous rejections of claims 51 and 113 above, electron impact mass spectra of compound is not Applicant's own invention, but can be derived from open literature, such as Deinzer's. There is no evidence, whatsoever, that Applicant has ever performed any precision mass measurements of electron impact mass spectra of compounds for use as calibration standard. Therefore, the step of compiling and using what is already known in the art is not patentable, since it only involves routine skill in the art.

On the other hand, Deinzer et al. teach how to obtain electron impact mass spectra of compound ions, and also makes such spectra available for Applicant to use, as recited in Col.5/ll.47-68, Col.6/ll.66-68, Col.7/ll.1-5 and Col.18/ll.37-51.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include or add into Westphall's/Patterson's/Labowsky's database Deinzer's electron impact mass spectra of compound, since such mass spectra is normally difficult to distinguish by conventional mass spectrometry, but certain isomers, however, capture low-energy electrons to form stable radical anions, as taught by Deinzer in Col.18/ll.39-42.

One of ordinary skill in the art would have been motivated to adopt Deinzer's teaching of how to generate electron impact mass spectra of compounds, or include

and make use Deinzer's spectra in the database, since such mass spectra is normally difficult to distinguish by conventional mass spectrometry, as taught by Deinzer in Col.18/ll.39-42.

Communications

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 571 272 2482. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571 272 2477. The central fax phone number for the organization where this application or proceeding is assigned is 571 273 8300 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571 272 5993.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bes

June 16, 2006

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